

# Incorporating Superfund Risk Assessment Principles into PA/SI Investigations

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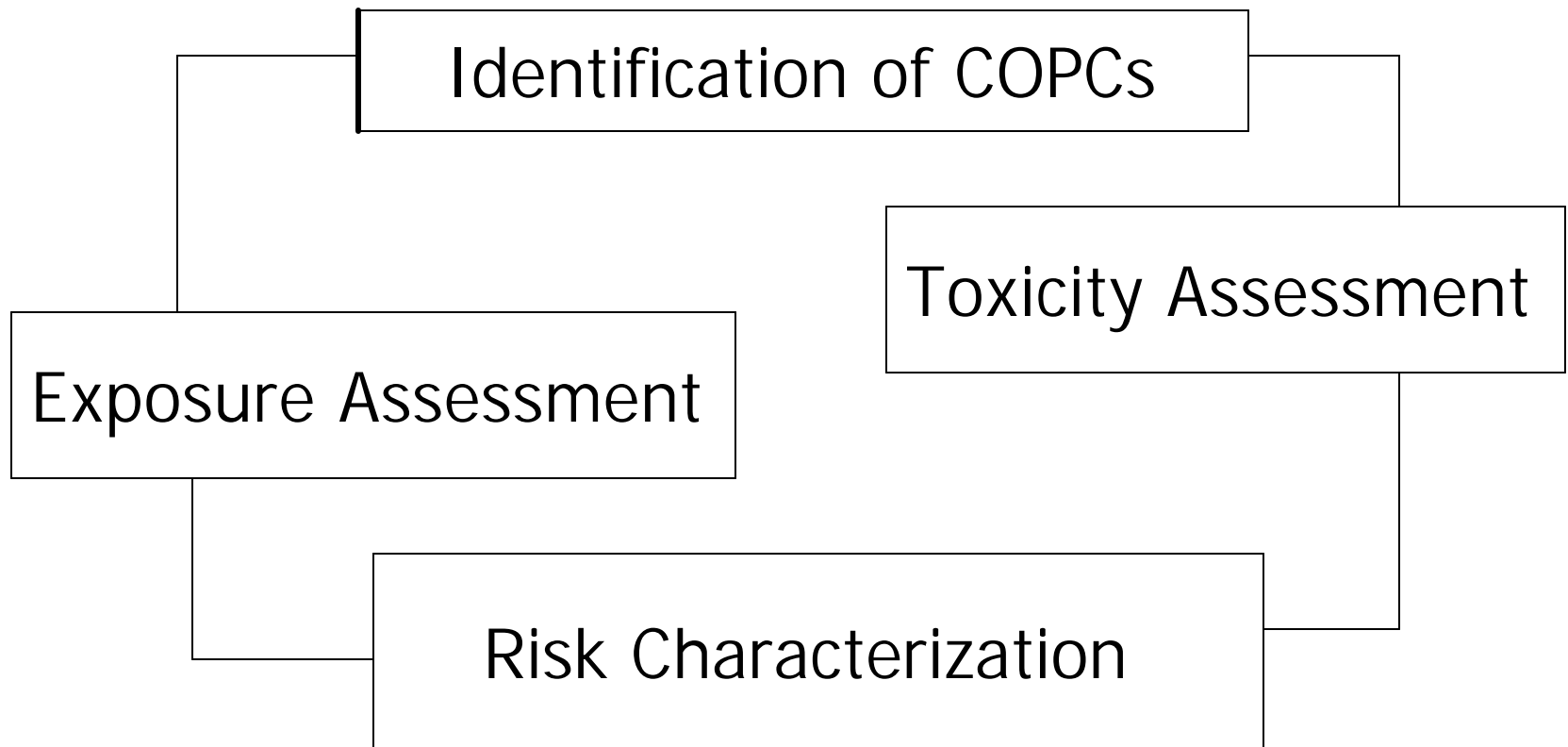
# Discussion Overview

- Overview of the Superfund Human Health Risk Assessment (HHRA) Process
- Where Can the HHRA Fit Into the Site Assessment Process?
- Examples Of Sites Where the HHRA was introduced during the Site Assessment Process
- Benefits of Incorporating the HHRA into the Site Assessment Process

# Overview of the HHRA

- Baseline Human Health Risk Assessment Process to Evaluate Risks
  - Now, Under Current Conditions; and
  - In the Future if No Remedial Action Occurs

# HHRA 4-Step Process



# Where Can the HHRA Fit Into the Site Assessment Process?

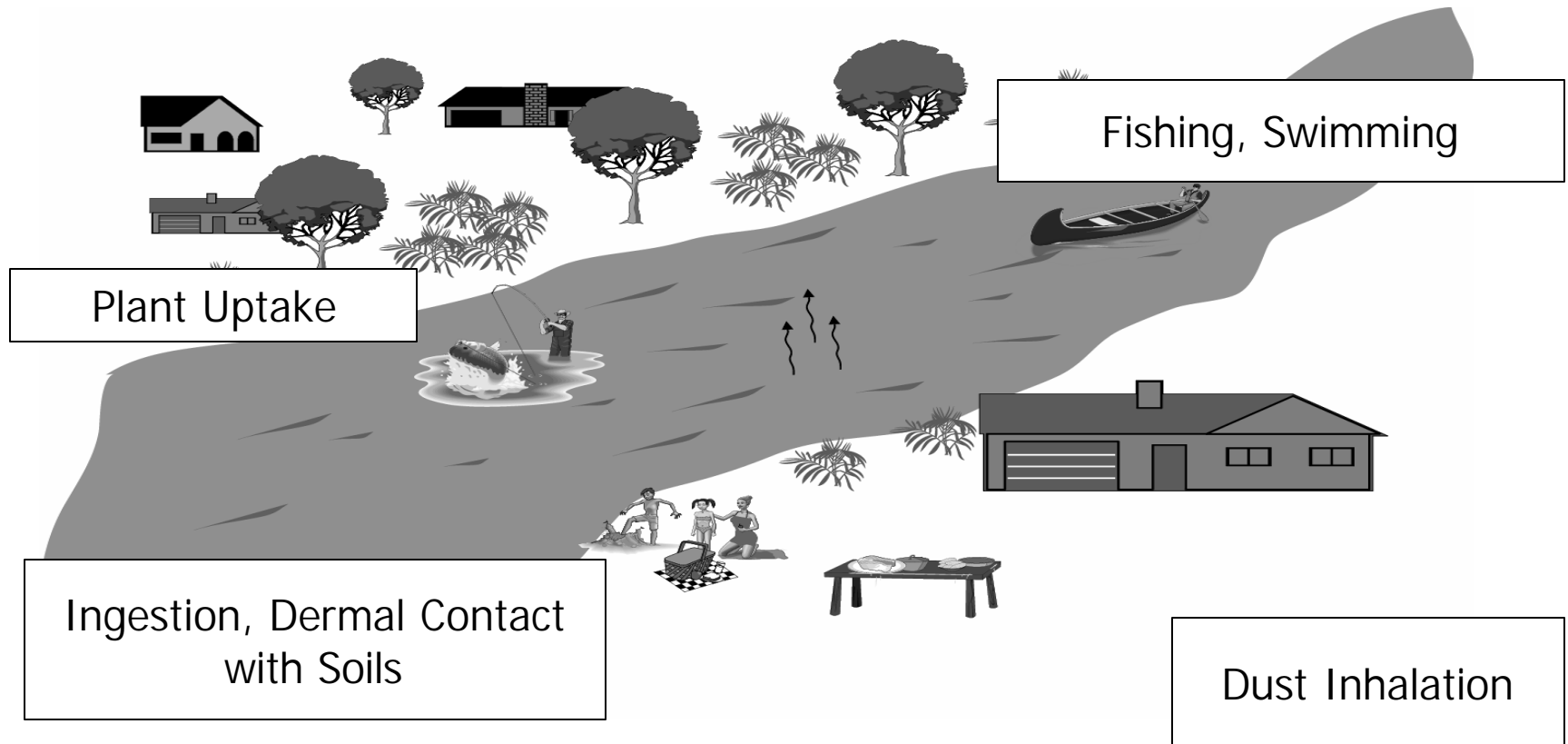
- Project Scoping
  - Sample Locations
  - Detection Limits
- Background
  - Sample Locations
  - Number of Samples
  - Background Guidance: “Role of Background in the CERCLA Cleanup Program” (OSWER 9285.6-07P)

# Where Can the HHRA Fit Into the Site Assessment Process?

- Identification of COPCs
  - Former Workers
  - Community Members and Leaders
  - Local Government Officials

# Where Can the HHRA Fit Into the Site Assessment Process?

## Exposure Assessment



# Where Can the HHRA Fit Into the Site Assessment Process?

- Exposure Assessment
  - “Before that was a strip mall with a day care center, it was a vacant field littered with the carcasses of hundreds of 55 gallon drums...”
  - Ground Water – Is it used for anything – drinking, irrigation, washing cars, filling pools, process water?

# Where Can the HHRA Fit Into the Site Assessment Process?

- Exposure Assessment
  - Sediment – Homeowners often use sediments from nearby streams and creeks to regrade yards.
  - Surface Water – Do people swim, fish, wade? Does it flow through residential yards? Even if fishing advisories are in place, do people fish recreationally?

# Where Can the HHRA Fit Into the Site Assessment Process?

- Exposure Assessment
  - Find Out How People Utilize Common and Recreational Areas – Playgrounds, Empty Lots, Local “Hot Spots”
  - Locate the Nearest Areas for Sensitive Populations
    - Schools, Daycare Facilities, Hospitals, Adult Care Facilities, Retirement Homes – And Find Out How People Get There.

# Where Can the HHRA Fit Into the Site Assessment Process?

- Toxicity Assessment
  - Incorporates Peer-Reviewed Toxicity Data When Available – Information Quality Guidelines
  - Allows for the Use of Provisional or Surrogate Toxicity Values

# Where Can the HHRA Fit Into the Site Assessment Process?

- Risk Characterization
  - Identifies the Cancer Risks and Noncancer Hazards for Populations, Based on Exposure to All COPCs and Through All Exposure Pathways
  - Identifies the Subset of Chemicals that are Driving the Cancer Risk and Noncancer Hazard

# Examples of Sites Where the HHRA was Introduced

- Cayuga County Groundwater
  - Spoke to residents to find out that groundwater contaminated with Vinyl Chloride was used to feed dairy cows. Evaluated the potential for vinyl chloride to bioaccumulate in milk.
  - Discovered that residents were using the groundwater to irrigate and water fields. Assessed the risks of inhalation of vinyl chloride through these activities.

# Examples of Sites Where the HHRA was Introduced

- Shenandoah Road Groundwater
  - By going door to door and speaking to residents, was able to determine how people were using their groundwater – many people were drinking store-bought bottled water, but exposure to VOCs continued via showering, laundry, dishwashing.

# Examples of Sites Where the HHRA was Introduced

- Current Investigation
  - Stream flows through the yards of several neighborhoods. By talking to homeowners, were able to determine that several had landscaped their yards by using sediments.

# Examples of Sites Where the HHRA was Introduced

- Vapor Intrusion – Groundwater or Soil
  - Residential Well Inside the Home
  - “Wet Basement” – Sump Pump or French Drain
  - Location of Utility Lines in the Zone Between Contamination and the Home (Slab/Crawlspace/Basement)

# Benefits of Incorporating the HHRA into the Site Assessment Process

- Identify Immediate Threats to Human Health
- Site Specific Information on Exposure Pathways
- Evaluate Current and Potential Cancer Risks and Noncancer Hazards

# Benefits of Incorporating the HHRA into the Site Assessment Process

- Uses the Most Up To Date Toxicity Data
- Identify Pathways with Unacceptable Levels of Risk/Hazard
- Focus on Chemicals that are Risk Drivers

# Benefits of Incorporating the HHRA into the Site Assessment Process

- Cost Effective – Can Locate Samples Based on Multiple Needs
- Consistent Planning from Preremedial to Remedial
- Expedites the Process from Site Identification through RI/FS